

WE CLAIM:

1. A method for antimicrobial treatment comprising applying to microbes two solvent antimicrobial composition;

5 the two solvent antimicrobial composition comprising diluting solvent, antimicrobial solvent, and antimicrobial agent;
wherein the composition provides greater than a 1-log order reduction in population of spores or bacteria of *Bacillus cereus* within 10 seconds at 60 °C.

10 2. The method of claim 1, wherein the diluting solvent comprises water.

3. The method of claim 1, wherein the antimicrobial agent comprises halogen containing antimicrobial agent, peroxy carboxylic acid, organic acidifying agent, or mixture thereof.

15 4. The method of claim 3, wherein the halogen containing antimicrobial agent comprises hypochlorous acid, hypochlorous acid salt, chlorine dioxide, hypobromous acid, hypobromous acid salt, or interhalide.

20 5. The method of claim 4, wherein the interhalide comprises iodine monochloride, iodine dichloride, iodine trichloride, iodine tetrachloride, bromine chloride, iodine monobromide, iodine dibromide, or mixture thereof.

6. The method of claim 3, wherein the peroxy carboxylic acid comprises peroxyacetic acid, peroxyformic acid, peroxyoctanoic acid, ester peroxy carboxylic acid, salt thereof, or mixture thereof.

25 7. The method of claim 3, wherein the organic acidifying agent comprises aliphatic carboxylic acid, aromatic carboxylic acid, or mixture thereof.

30

8. The method of claim 7, wherein the carboxylic acid comprises formic acid, acetic acid, propionic acid, heptanoic acid, octanoic acid, nonanoic acid, decanoic acid, benzoic acid, salicylic acid, salt thereof, or mixture thereof.

5 9. The method of claim 1, wherein the antimicrobial solvent comprises benzyl alcohol, ethylene glycol phenyl ether, propylene glycol phenyl ether, propylene carbonate, phenoxyethanol, dimethyl malonate, dimethyl succinate, diethyl succinate, dibutyl succinate, dimethyl glutarate, diethyl glutarate, dibutyl glutarate, dimethyl adipate, diethyl adipate, dibutyl adipate, dimethyl pimelate, diethyl pimelate, dimethyl suberate, diethyl suberate, or
10 mixture thereof.

10. The method of claim 9, wherein the antimicrobial solvent comprises dimethyl adipate, diethyl adipate, dibutyl adipate, dimethyl pimelate, diethyl pimelate, dimethyl suberate, diethyl suberate, or mixture thereof.

15 11. The method of claim 1, wherein the composition further provides greater than 1-log order reduction in population of the mold *Chaetomium funicola* within 10 seconds at 60 °C.

20 12. The method of claim 1, comprising applying the composition to hard surface, soft surface, porous surface, food substance, or skin.

13. The method of claim 1, comprising applying the composition to food packaging, and
25 wherein the composition provides greater than 3-log order reduction in the population of bacteria or spores of *Bacillus cereus* within 10 seconds at 60° C.

14. The method of claim 6, wherein the food packaging comprising aseptic food packaging.

15. The method of claim 1, comprising applying the composition to hospital or surgical linens or garments,

wherein the composition provides greater than 3-log order reduction in the population of bacteria or spores of *Bacillus cereus* within 10 seconds at 60° C.

5

16. The method of claim 1, comprising applying the composition at a sufficient concentration and for a sufficient time for sanitizing a solution or hard surface,

wherein the composition provides greater than 3-log order reduction within 10 seconds at 60° C in the population of bacteria or spores of the *Bacillus* species in the solution or on the surface.

10

17. The method of claim 1, comprising applying the composition at a sufficient concentration and for a sufficient time for disinfecting a hard surface,

wherein the composition provides greater than a 5-log order reduction within 10 seconds at 60° C in population of bacteria or spores of the *Bacillus* species on such surface.

15

18. The method of claim 1, comprising applying the composition at a sufficient concentration and for a sufficient time for acting as a sporicide in a solution or on a hard surface,

20

wherein the composition provides greater than 5-log order reduction within 10 seconds at 60° C in population of spores of the *Bacillus* species in the solution or on the surface.

25

19. The method of claim 1, comprising applying the composition at a sufficient concentration and for a sufficient time for sterilizing a hard surface,

wherein the composition provides substantially complete elimination of population of bacteria or spores of a *Bacillus* species on such surface.

30

20. The method of claim 1, comprising applying to surface, body of water, or stream of water.

21. An antimicrobial concentrate and instructions for mixing the concentrate with water,

wherein the concentrate comprises antimicrobial solvent and antimicrobial agent,
the amounts of antimicrobial solvent and antimicrobial agent in the concentrate being

5 sufficient so that when the concentrate is mixed with water according to the instructions the resulting mixture will provide greater than a 1-log order reduction in population of bacteria or spores of *Bacillus cereus* within 10 seconds at 60° C.

22. The concentrate of claim 21, wherein the antimicrobial agent comprises
10 halogen containing antimicrobial agent, peroxy carboxylic acid, organic acidifying agent, or mixture thereof.

23. The concentrate of claim 22, wherein the halogen containing antimicrobial agent comprises hypochlorous acid, hypochlorous acid salt, chlorine dioxide, hypobromous acid, hypobromous acid salt, or interhalide.

24. The concentrate of claim 23, wherein the interhalide comprises iodine monochloride, iodine dichloride, iodine trichloride, iodine tetrachloride, bromine chloride, iodine monobromide, iodine dibromide, or mixture thereof.

20
25. The concentrate of claim 22, wherein the peroxy carboxylic acid comprises peroxyacetic acid, peroxyformic acid, peroxyoctanoic acid, ester peroxy carboxylic acid, salt thereof, or mixture thereof.

25
26. The concentrate of claim 22, wherein the organic acidifying agent comprises aliphatic carboxylic acid, aromatic carboxylic acid, or mixture thereof.

27. The concentrate of claim 26, wherein the carboxylic acid comprises formic acid, acetic acid, propionic acid, heptanoic acid, octanoic acid, nonanoic acid, decanoic acid, 30 benzoic acid, salicylic acid, salt thereof, or mixture thereof.

28. The concentrate of claim 21, wherein the antimicrobial solvent comprises benzyl alcohol, ethylene glycol phenyl ether, propylene glycol phenyl ether, propylene carbonate, phenoxyethanol, dimethyl malonate, dimethyl succinate, diethyl succinate, dibutyl succinate, dimethyl glutarate, diethyl glutarate, dibutyl glutarate, dimethyl adipate, diethyl adipate, dibutyl adipate, dimethyl pimelate, diethyl pimelate, dimethyl suberate, diethyl suberate, or mixture thereof.

5
29. The concentrate of claim 28, wherein the antimicrobial solvent comprises dimethyl adipate, diethyl adipate, dibutyl adipate, dimethyl pimelate, diethyl pimelate, 10 dimethyl suberate, diethyl suberate, or mixture thereof.

30. The concentrate of claim 21, further comprising diluting solvent.

15
31. The concentrate of claim 21, wherein the composition also provides greater than 1-log order reduction in population of the mold *Chaetomium funicola* within 10 seconds at 60° C.

20
32. An antimicrobial composition comprising diluting solvent, antimicrobial solvent, and antimicrobial agent,
wherein the composition provides greater than a 1-log order reduction in the population of bacteria of *Bacillus cereus* within 10 seconds at 60° C.

33. The composition of claim 32, wherein the diluting solvent comprises water.

25
34. The composition of claim 32, wherein the antimicrobial agent comprises halogen containing antimicrobial agent, peroxycarboxylic acid, organic acidifying agent, or mixture thereof.

30
35. The composition of claim 34, wherein the halogen containing antimicrobial agent comprises hypochlorous acid, hypochlorous acid salt, chlorine dioxide, hypobromous acid, hypobromous acid salt, or interhalide.

36. The composition of claim 35, wherein the interhalide comprises iodine monochloride, iodine dichloride, iodine trichloride, iodine tetrachloride, bromine chloride, iodine monobromide, iodine dibromide, or mixture thereof.

5

37. The composition of claim 34, wherein the peroxy carboxylic acid comprises peroxyacetic acid, peroxyformic acid, peroxyoctanoic acid, ester peroxy carboxylic acid, salt thereof, or mixture thereof.

10 38. The composition of claim 34, wherein the organic acidifying agent comprises aliphatic carboxylic acid, aromatic carboxylic acid, or mixture thereof.

15 39. The composition of claim 38, wherein the carboxylic acid comprises formic acid, acetic acid, propionic acid, heptanoic acid, octanoic acid, nonanoic acid, decanoic acid, benzoic acid, salicylic acid, salt thereof, or mixture thereof.

20 40. The composition of claim 32, wherein the antimicrobial solvent comprises benzyl alcohol, ethylene glycol phenyl ether, propylene glycol phenyl ether, propylene carbonate, phenoxyethanol, dimethyl malonate, dimethyl succinate, diethyl succinate, dibutyl succinate, dimethyl glutarate, diethyl glutarate, dibutyl glutarate, dimethyl adipate, diethyl adipate, dibutyl adipate, dimethyl pimelate, diethyl pimelate, dimethyl suberate, diethyl suberate, or mixture thereof.

25 41. The composition of claim 40, wherein the antimicrobial solvent comprises dimethyl adipate, diethyl adipate, dibutyl adipate, dimethyl pimelate, diethyl pimelate, dimethyl suberate, diethyl suberate, or mixture thereof.

42. The composition of claim 32, wherein the diluting solvent comprises water and the antimicrobial solvent has a water solubility less than about 10% by weight.

30

43. The composition of claim 42, wherein the antimicrobial solvent has a water solubility less than about 5% by weight. —

44. The composition of claim 43, wherein the antimicrobial solvent has a water
5 solubility less than about 2% by weight. —

✓ 45. The composition of claim 42, comprising water and at least about 10 weight
% antimicrobial solvent.

10 46. The composition of claim 42, comprising water and at least about 50 weight
% antimicrobial solvent. —

47. The composition of claim 32, comprising water and about 75 weight % to
about 95 weight % antimicrobial solvent. —

15 48. The composition of claim 32, wherein the composition is substantially 112
cosolvent-free. —

20 49. The composition of claim 32, wherein the composition is substantially 112
surfactant-free. —